

# Flight

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

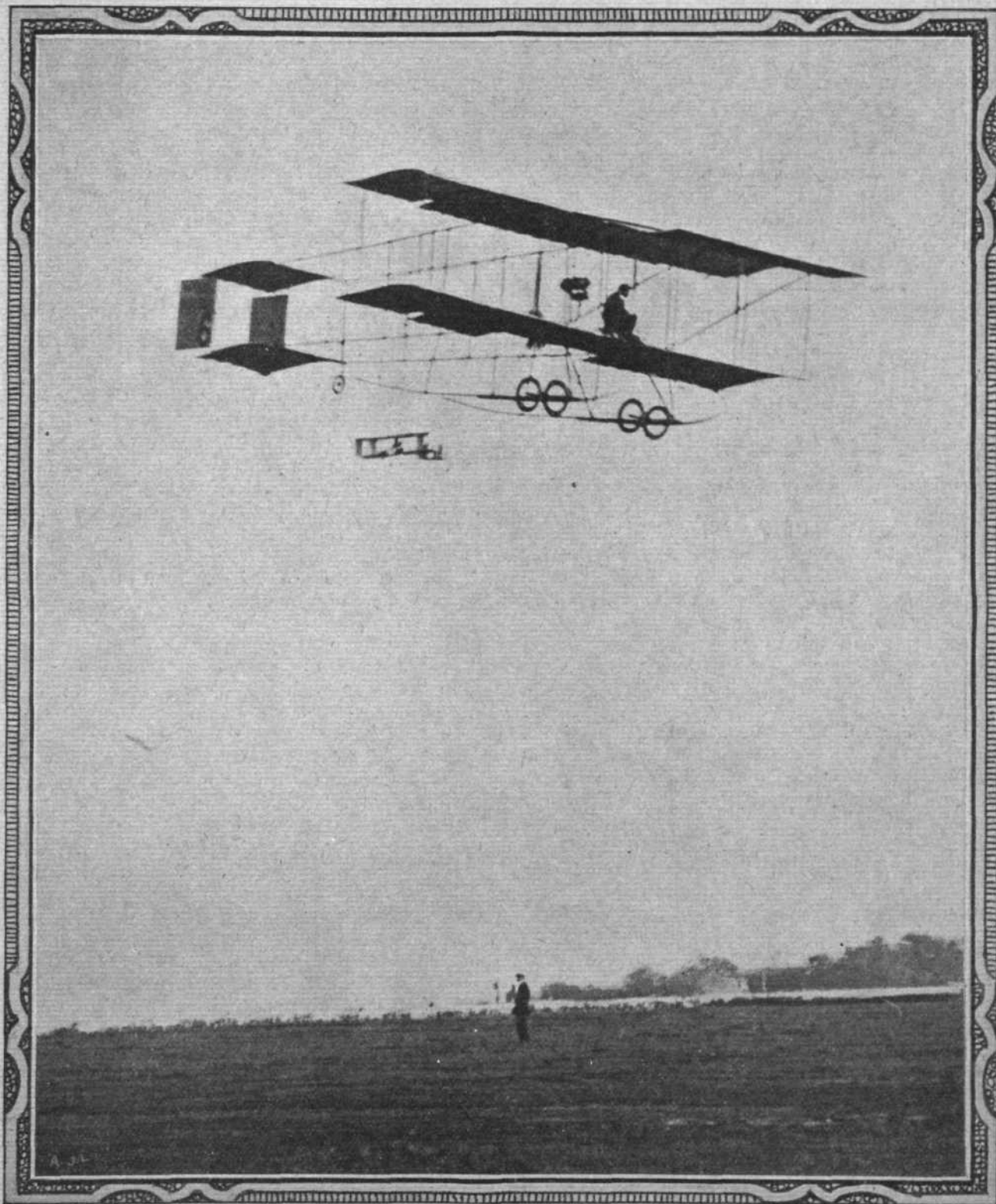
OFFICIAL ORGAN OF THE AERO CLUB OF THE UNITED KINGDOM.

No. 51. Vol. I.]

DECEMBER 18TH, 1909.

[Registered at the G.P.O.]  
as a Newspaper.

[Weekly, Price 1d.  
Post Free, 1½d.]



"Flight" Copyright Photo.

FLIGHT PHOTOGRAPHS.—Another example of a genuine enlarged photograph, with two machines in the air at a distance. This was "snapped" at Blackpool during the big meeting, and shows Paulhan on his Henry Farman machine, and Rougier behind on a Voisin biplane.

## "FLIGHT GOLF"—A NEW GAME.

PRACTICAL aviation is of such absorbing interest in these times of daily progress that one is apt either to overlook, or else to look down upon, a branch of the subject that is extremely fascinating and that is distinctly useful—in view of future developments. We refer to model aeroplane flying. This is a sport, or a means of investigation—however one may regard it—that has long enjoyed some meed of popularity, and is very naturally gaining rapidly in favour, almost to the extent of becoming a craze just now. To many people—and especially before controlled human flight became an accomplished fact—it may have seemed that the flying of model aeroplanes was a trivial frittering away of time, or at best a somewhat purposeless and resultless hobby that could do little more than appeal to the more or less grown-up schoolboy. Perhaps it was mentally compared with the flying of kites, which, to the uninitiated, certainly does not appear to be either a useful or an exciting occupation, even though a very considerable amount of useful knowledge has been derived from *them* by scientific investigators.

It is, however, beyond question that a very considerable amount of valuable data has been made available for use in connection with full-sized machines merely by observation and investigation of the behaviour of small models under varying conditions of design and of wind; while it certainly is an absolute fact that a very great amount of personal skill can be brought to bear upon the "art" as a result of continued experiment. Many of the model flyers that are available to-day, and can now be bought anywhere in great variety as regards size and elaborateness of detail, are moreover, capable of achieving flights of quite sufficient length to remove them outside the category of toys pure and simple. They are, in fact, machines from which anyone who has the intention of investing in a full-sized machine, either now or in the future, or who really wants to gain a working acquaintanceship with the subject, can learn a very great deal of the elements of flight.

Practical flight and model-flying have passed along parallel lines of development, and so it is that as in the former sphere of activity we have this year seen vast strides accomplished, so in the model-flying world, also, such progress has been made that it is now quite possible to match one machine against another in open competition and to make the sport quite exciting. As matters stand, however, there is a decided risk that the growing interest may flag before it has served its full purpose, unless something can be done to impart the full attractiveness of an actual game or pastime into the sport. It is true that the individual model-flyer may quite well simultaneously amuse and instruct himself by testing his own machine with the various "improvements" he has devised, and so endeavour to obtain even longer, steadier, or higher flights with it; but that type of man is limited in numbers, and is not representative of the masses whose interest should be sought. A far more ambitious programme than that is needed, for not only is it essential that a type of competition should be introduced which will have some definite meaning as regards superiority of skill exhibited by the competitors, or as regards greater all-round capabilities on the part of their models, but it is highly desirable that such competitions may be played by any person or any group of persons whenever they should feel disposed for the *recreation* involved.

It is because we have realised this risk, and because of the obvious difficulty that stands in the way of instituting satisfactory trials for model machines that we now put forward a suggestion which we believe may be made to bear good fruit if it is taken up in the proper way, both by those who build model flyers and by those for whom they are built. We ourselves have found, during the course of experiments we have carried out with various types of models that have been submitted to us, that many of the larger of these machines can travel distances of up to two or three hundred yards at a winding, and that their direction and distance of flight is subject to a very considerable amount of control. Hence it has not only been necessary to fly them on large open spaces such as are used for golf, but the idea has naturally occurred to us of which we are about to speak. Already it is probable that the heading of this page will have constituted a sufficient clue; and indeed we very much doubt if any very much greater elaboration of this idea is needed than is conveyed by the two significant words, "Flight Golf."

To make a new game of "Flight Golf" the materials necessary are two or more model aeroplanes and two or more operators, and a suitable ground staked out with "goals" or "holes," very much like a golf course. There is, of course, no essential use for bunkers of any description or for putting greens, but, beyond such obvious modifications, the game could be played, so far as the leading rules are concerned, in much the same way as real golf. Instead of the ball there is the model aeroplane, and instead of hitting the former with a club we fly the latter from point to point under its own stored power. Needless to say, too, the competition consists in the attempt of each operator to fly his model from hole to hole in a less number of separate flights than his opponent.

There is no question about it, but that a considerable amount of skill would be required for the proposed game. This, however, is skill which those who have previously flown models must already possess in some measure, while those who are trying for the first time will very soon begin to acquire it; and, best of all, it is skill of a kind for which increased proficiency can continue to be gained week after week the longer the player practises it. Clearly, it is not for us to make any attempt to frame an actual set of rules that might be followed; and for the moment there is no need for the more enterprising of our readers to wait for any rules at all. For them "Flight Golf" may be the essence of simplicity. But what we would ask is that they, as well as any of the model flying clubs, will give the game a trial and will report to us any suggestions or observations which may occur to them. We leave it to others to elaborate the bare suggestion that we have put forward, but we should, nevertheless, be glad if any who may play "Flight Golf" during the forthcoming festive season will let us know what they think of it or what may be wanted to make it a success. There is at least this to be said in its favour just now—that quite a respectable industry has already sprung up around the small machines, and that a fairly large number of models are already available. Doubtless, too, their enterprising makers would devote their ingenuities towards providing specially suitable machines for the game, if once it were to "catch on."



## FLIGHT PIONEERS.



MR. FRANK McCLEAN.

## THE BLERIOT CROSS-CHANNEL MONUMENT.

IMMEDIATELY following the historical feat of M. Louis Bleriot in crossing the Channel on his aeroplane, the Aero

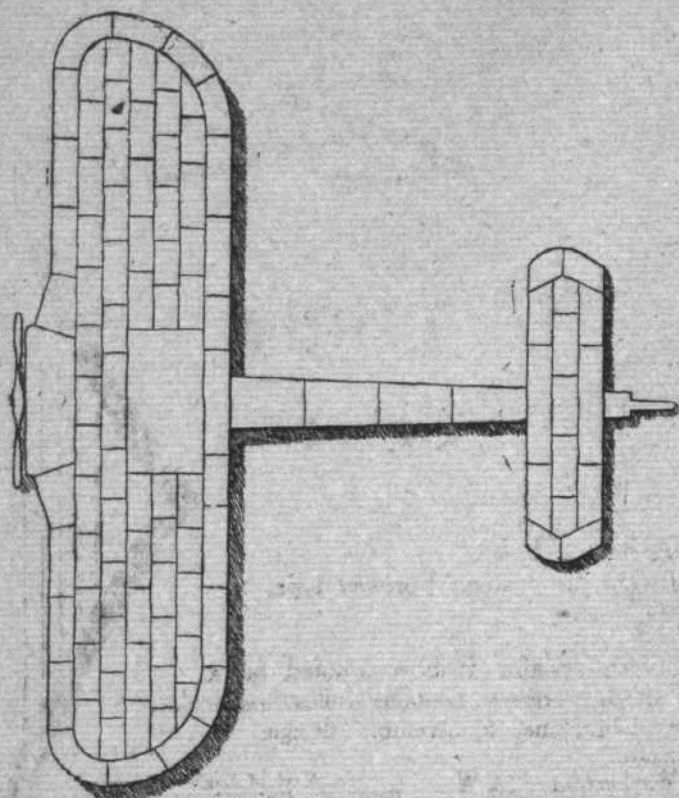
enabled this week to reproduce a plan of this memorial, the cost of which Mr. Alexander Duckham, with such splendid generosity, offered to defray and present to the Aero Club of the U.K.

The design is a full size plan of the actual machine used by Bleriot and is to be reproduced by granite slabs placed on the actual site of the landing. It should make an appropriate and lasting memorial to one of the greatest events in history, and in the obvious stability of the scheme selected we seem to see something symbolical of the future of flight when it shall at last have emerged from its present stage.

It is singularly fitting that the landing place should have been selected as the site for the memorial, inasmuch as there is, in the Forest of Guines, another memorial commemorating the first Channel crossing made in a balloon. This was erected by the French Government to Blanchard, a Frenchman, who alighted there after a most perilous passage on January 7th, 1785, during which he and his companion Dr. Jeffries, an Englishman, were thrice nearly immersed in the sea.

Jeffries received little credit and less reward for his part in the proceeding, which was of a principal character, and it is all the more a matter for appreciation on this account that someone should have come forward with such rare promptitude to give public evidence of that recognition of Louis Bleriot's performance, which it is so characteristic of the British to sincerely feel in their hearts, to promptly acknowledge by word of mouth, but to leave over to posterity for embodiment in a sign.

That the memorial has aroused Government recognition is likewise gratifying, the War Office having given official consent to the use of the site selected.



Club of the U.K. determined to erect a memorial at or near the spot where the intrepid aviator first alighted on British soil. By the courtesy of the Aero Club we are



AVIATORS AND PUPILS AT MOURMELON.—A warm between flights. From left to right, Messrs. Harkness, Hubert Latham, Lee Guinness, ———, Somers Somerset, ———, and Duray.



## AIRSHIPS IN WAR.

BELOW we give an abstract of the paper read before the Royal United Service Institution on Wednesday of last week. Lord Roberts presided, and a short summary of his very strong comments in connection with the subject of military aeronautics appeared in our last issue. Among others present were Admiral of the Fleet Sir G. H. U. Noel, Admiral the Hon. Sir E. Fremantle, Admiral Sir N. Bowden-Smith, Lieutenant-General H. D. Hutchinson, Lieutenant-General Sir R. S. S. Baden-Powell, General Sir John Dunne, Colonel E. S. E. Childers, R.E., Captain R. Cave-Browne-Cave, R.N., and Mr. J. W. Dunne.

The paper was followed by a discussion, and in view of the importance of the views of the naval and military experts we give a short *résumé* of their remarks. In the course of his paper Major Baden-Powell said:—

Aerial navigation was divided under two headings, namely, "heavier" and "lighter" than air appliances. Dirigible balloons, to be of practical value, required to be of great size and have rigid framework. Their speed was limited as compared with aeroplanes, but at present they could ascend to higher altitudes, and their record of distance travelled was more than twice the 144 miles' record made by Farman in the heavier-than-air machine. The aeroplane, although it could not as yet be made to carry the weight of a big dirigible, had yet peculiar advantages. It went faster, was a much cheaper and smaller object, was not nearly so vulnerable as the dirigible, required far fewer men to handle, and was easily stored and hidden from observation. Fogs would affect "dirigibles" more than aeroplanes, for the latter could skim along close to the ground. For reconnaissances, raids, carrying despatches, and communications aerial machines were of the highest value, and in naval warfare it would be found they could be used to great advantage in various ways. For land defence against an aerial fleet it was necessary to prepare guns and apparatus, and aerial torpedoes and motor cars carrying high-range cannon would have to be considered, whilst fortifications and magazines might have to be improved by the protection from attack by overhead covering. On the whole the only use of aerial machines that had been actually tested and proved of use in manoeuvres was for reconnaissance. Whether they might prove useful for other purposes was a matter of conjecture, but, as soldiers well knew, it was far more important for a General to receive detailed information about all that was going on in the enemy's lines than to be able to destroy a few hundred men or to devastate a store. Compare scouting by an aerial machine with the cavalry scout. To receive reports from all along the line that the scouts had been fired upon gave but little real information. There was the curtain—what was behind it? That curtain could seldom be penetrated, but with any form of apparatus capable of travelling in the upper regions for even a few miles, complete, reliable and full information could be obtained of the enemy's position, movements, armaments, and even numbers. Apart from reconnaissance there were in war other possibilities to which aerial machines might be applied. Thus, as regards the transport of troops, if aeroplanes continued to develop as they had done, it was quite probable they would soon be used in hundreds, if not thousands, carrying three or four men in addition to the driver. Eventually they might become a means of invading a country. The lecturer then briefly discussed the value of air craft in discharging explosives, raids, despatch carrying, and in savage warfare. As a substitute for cavalry an aeroplane would probably be less vulnerable than a horse, and would not offer a very much bigger target. Though the fuel supply might be more difficult than the forage, yet such machines could easily be sent off fifty miles or more to get their supply—and be back and ready for duty within a few hours. As a coin of vantage for the Commander-in-Chief during an action a good airship would be unsurpassed, but here all depended upon the ability of the hostile artillery or air fleet. As to reconnoitring at sea a fleet could be clearly seen thirty miles off, whereas at this distance practically no useful information could be obtained of land forces, and, therefore, an airship floating high above its fleet would be able to give most timely information about the enemy. Then there was the important question of fighting in the air. If one nation possessed a type of machine which from the fighting point of view was superior to that of the enemy it might soon oust the hostile airship and leave that nation supreme in the air—a most enviable position. A fight between an aeroplane and a dirigible might be compared to that of a hawk and a heron. The dirigible could rise to a greater height, could carry a better armament, but on the other hand it offered a larger target, and was very vulnerable. The aeroplane with its greater speed, better manoeuvring power, and less liability to damage, had an immense advantage. It seemed highly probable that very soon aeroplanes would be constructed which would be able on every

point to hold the advantage over the balloon. As to aeroplane against aeroplane such a fight in mid-air would form a most interesting spectacle to those below. Ease of manoeuvring and speed would evidently be valuable factors, and a machine carrying two or more men armed with rifles would soon have the better of a single-man machine. Coming to land defence against attack by airship Major Baden-Powell held that as we had no efficient aerial war machines it was of the utmost importance for us to make such provision as we could in case war broke out with a Power which possessed a number of such vessels. Thus, it was necessary immediately to arrange for guns to be made or adapted to fire at a high angle. Then there were aerial torpedoes and aerial mine-fields similar in principle to submarine mine-fields (small captive balloons being let up to a height of 5,000 feet, with explosive mines and electrical equipment).

The machines which are now actually in existence, both dirigible balloons and aeroplanes, can be made great use of in war; and it seems fairly certain that in another few years' time their efficiency will be greatly increased. If properly used, not by ones and twos, but by hundreds, they will without doubt greatly affect our method of warfare. Reconnaissance will be so much more efficiently carried out that the commander of a force will not be embarrassed by that uncertainty and lack of information which so often prevents him from taking the initiative. Operations will be quickened, and wars more rapidly lost or won. Raids into the enemy's country, which it seems impossible to entirely prevent, will, on the other hand, tend to hamper and delay his actions, and spread the zone of operations over the whole country. Let us not forget that machines are now actually in existence that can come over, without warning, from the Continent, and it is more than possible that they might be the means of causing considerable damage to us, even risking their own loss thereby. Therefore, we must, and at once, make due preparation to defend ourselves against any such aggression.

Colonel Capper opened the discussion, and said that, irrespective of preparedness elsewhere, it was the duty of this country to make the best of any new weapon of warfare. On the whole he agreed with the lecturer, who had, however, perhaps, taken a somewhat exaggerated view of the difficulty of aerial navigation when weather conditions were adverse. Fog was a great hindrance to any form of transit by land or sea. Fogs were often local, thin, and near the ground. It would be fairly easy to navigate by the compass. He did not think that there would be much difficulty in working in the clouds. As to strategical reconnaissance, great benefit would arise from the knowledge, which airships would enable them to gain, of extensive movements of troops and matters of that kind. It was necessary to have extensive practice at night; and as to aeroplanes taking the place of cavalry, if they had to pass over a country dotted with troops, they would have little chance of getting back. Further, the scout on an aeroplane could not locate himself like a man on the ground.

Captain Tulloch pointed out that even if this country purchased a ready-made fleet of airships it would have no places to house or repair them, and no crews to man them. We could not buy ready-made experience. What use was Germany going to make of the 15 ships it already possessed, of the 25 or 26 ships it would possess next year, and of the 70 it would probably possess in two years' time? It was possible for one airship, given reasonably fair weather, to prevent the British Fleet from replenishing its magazines with cordite, and from getting additional supplies manufactured for nearly a year. Incidentally such a ship could in twenty-four hours set alight the whole of the shipping and dock-yard accommodation in the Thames without dropping a single bomb or hovering over a single spot. He intended to ask every Parliamentary candidate whether or not he would take steps for the establishment of a proper aerial fleet, which was the only true form of defence against another aerial fleet. Captain Tulloch also referred to the necessity of obtaining high-angle guns.

According to Mr. J. W. Dunne the present kind of aeroplane manufactured by civilians was to a great extent useless for military purposes. For one thing the wings should be able to stand, without collapse, punctures by bullets, but that would from the civilian point of view make against efficiency. The military aeroplane was as different from the ordinary aeroplane as the torpedo boat was from the pleasure yacht, and he advocated that such a craft should be designed and made by the War Office. On the whole he was inclined to think that the aeroplane would not be much use at sea.

Admiral Sir G. Noel maintained that dirigibles would have to act at night if they were to do real damage. Yet such navigation must be difficult, for how could they tell one town from another at night? That was a matter of years of experience, and it would be years before aerial navigation would be thoroughly understood.



## A LIGHT CARBURETTOR FOR FLIGHT ENGINES.

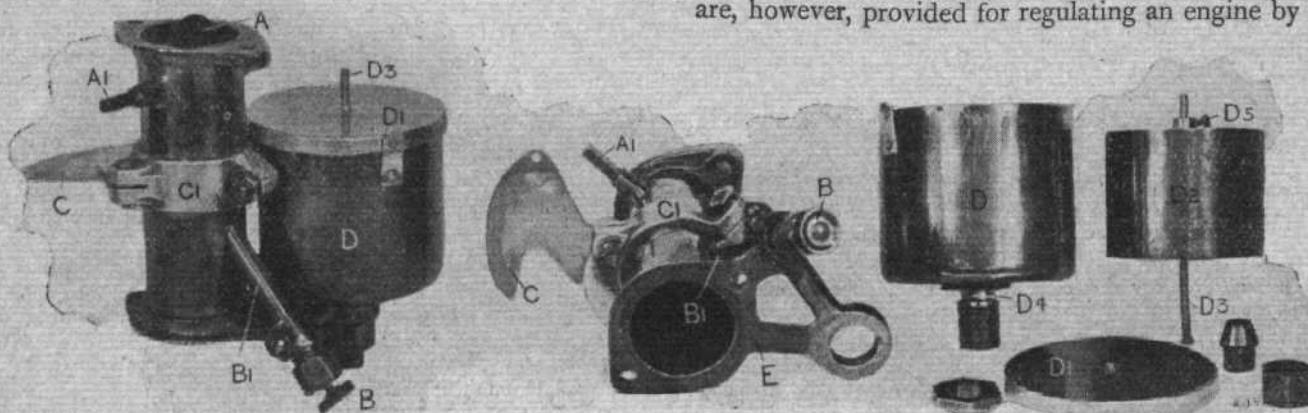
QUITE one of the lightest carburettors that we have seen is a special "S.U." design, which is manufactured by Messrs. G. Wailes and Co. for the Motor Supply Co., of Piccadilly. Although suitable for engines of 40-h.p. or more it weighs but little over  $1\frac{1}{2}$  lbs., and yet it has combined with it, in addition to the butterfly throttle-valve, A, with its spindle, A<sup>1</sup>, an adjustable needle-valve, B, for the fuel, and an adjustable choke-plate, C.

The photographs that we give herewith show it standing upright on the extreme left, and lying down with the

D<sup>1</sup>, to be placed in open communication through a hole in the bracket with the needle-valve, D<sup>3</sup>.

Simplicity as regards the float-feed device is obtained by making the same thread serve for fixing the float-feed-chamber in place as for receiving the petrol-pipe union, and for making the fuel-valve, D<sup>3</sup>, pass straight up through the float from beneath, while the level of the petrol is adjusted by tightening the set-screw, D<sup>5</sup>, at the correct height about the valve.

There is, of course, nothing automatic about this carburettor, the design of which is extremely ingenious from a constructional point of view. Ample facilities are, however, provided for regulating an engine by hand,



"Flight" Copyright Photo.

Views complete, and with the float-feed chamber removed and dismantled, of the "S.U." flight carburettor.

float-feed chamber removed in the centre of that group, while on the extreme right is the spun yellow metal float-feed chamber, D, with its cover, D<sup>1</sup>, float, D<sup>2</sup>, and needle-valve, D<sup>3</sup>, shown separately. From these views it will be observed that a very light framework, E, is employed for assembling the various parts together; that there is a clear full-bore opening right up through the mixing-chamber for the main air; that the spray-jet, B<sup>1</sup>, projects through into the mixing-chamber at an angle; and that the float-feed-chamber needs merely to be bolted into place within the bracket, A, in order for the feed-holes,

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### Accident to M. Bleriot at Constantinople.

On the 10th inst., M. Bleriot arrived at Constantinople with the object of giving exhibition flights on his monoplane. The first trials were made on Sunday, and attracted a large crowd to the flying ground, which was very small, too small in fact for any flying to be done with comfort. In addition, there was a strong wind blowing. The spectators becoming impatient, about 4 o'clock in the afternoon M. Bleriot determined to go up, and reached a height of about 60 ft. He was then caught by the strong wind and carried towards the Tataola Hill, 3 kiloms. away from the aerodrome. There he was unable to rise sufficiently to clear the houses and was driven against the wall of one. The machine fell to earth from a height of about 25 ft., and was badly smashed, but M. Bleriot retained his seat. Although able to get up, he complained of internal pain, and it was feared he had sustained severe injuries. He was at once taken to the French Hospital, and on Monday it was announced that there was no danger and it was hoped he would be able to be about by the end of the week. The sympathy of all interested in flying matters will be with the daring aviator in his unfortunate accident, and we wish him in the name of our readers a speedy and complete recovery.

since, in addition to the throttle-valve, A, which regulates the volume, and the needle-valve, B, which adjusts the spray-jet, the richness of the mixture and its thoroughness of atomisation can be controlled by means of the throttle-plate, C, that regulates the effective area, and therefore the air velocity, in the neighbourhood of the spray-jet. In addition to the points already mentioned, brief mention should be made of the neat spring-clip fastening which serves to hold the top of the float-feed-chamber in place as also the neat manner in which the aluminium casting, C<sup>1</sup>, is utilised for mounting the choke-plate, C.

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### Mr. Maurice Farman's Cross-Country Record.

YET another big step forward in the development of mechanical flight was registered on Thursday of last week, when Mr. Maurice Farman succeeded in flying from his shed at Buc to new quarters at Chartres, a distance of about 42 miles. This was accomplished in 53 mins., and at an average height of 240 ft. Starting at eight minutes to three, Mr. Maurice Farman at once headed for Trappes, and flying over Rambouillet, Orphin, Gallardon, and Coltinville, he arrived at Chartres at 3.45 p.m. This is, of course, a world's record, but doubtless it will not stand for long. Mr. Maurice Farman intends to continue his aerial journey by stages to Bordeaux.

His machine was constructed by himself and M. A. Neubauer in their works at Buc. It is very similar to the Voisin biplane in general design, but it embodies several ideas of Mr. Maurice Farman, which have proved very effective. A photograph of the machine appeared in our issue of February 6th last, and the only material alteration since then is that curtains have been fitted between the pair of upright struts at each end of the main planes and also at each side of the tail. The engine is an 8-cyl. air-cooled Renault, with Bosch magneto high-tension ignition.

## THE R.A.C. AND THE AERO CLUB OF THE U.K.

BEARING in mind the misconceptions which exist in certain quarters regarding the relations between the Royal A.C. and the Aero Club of the U.K., it is interesting to notice the following remarks which appear in an editorial in the current *R.A.C. Journal*:—

"In connection with the report of the proceedings at the last meeting of the Committee of the Club it will be observed that in acknowledging the congratulations of the Club on his initial circular flight with an all-British aeroplane, Mr. J. T. C. Moore-Brabazon took occasion to touch on the relations that exist between the Royal Automobile Club and its off-spring, the Aero Club of the United Kingdom. Many members, especially those recently elected to either body, may, perchance, be unaware of the very real and cordial relations that exist between the representative motoring and representative aeronautical organisations in Britain. What is equally to the point is that the parent Club has by no means exhausted the store of service that it has been rendering, and is prepared to render, to the parallel organisation which finds itself in the earlier stages of a mighty movement concerned with travel by air. Yet it is not the purpose of the Club to presume, or in any way to interfere with, the sphere of activity of the Aero Club. The spirit of the helpfulness which the older and thoroughly established body entertains towards the newer one, that is making such eminently gratifying progress, is one of support and encouragement in every practical form, and, in whatever few phases or occasions may be necessary, of co-operation. One touches on this matter not only by way of a

reminder to those who may be unacquainted with the history of both bodies, but also because it is obvious that there will be occasions in the future in plenty when it will be of the utmost service to those in the aeronautical world to feel and to know that the moral support and active assistance of the Royal Automobile Club is behind the Aero Club of the United Kingdom, which stands in that relation towards the development of aerial navigation that the Royal Automobile Club does towards the more conventional methods of employing the internal-combustion engine."

Mr. Moore-Brabazon's letter referred to above is as follows:—

"28, Chesham Street, S.W.,

"November 7th, 1909.

"DEAR SIR,—Your letter of the 4th conveying the congratulations of your Committee is before me, and it is with the greatest gratitude I reply to it.

"The relations existing between the Royal Automobile Club and its offspring, the Aero Club, are and have always been an example to other countries. On this account more especially are the congratulations of your Club welcome, in that they come from a powerful body that has ever helped, and I hope will continue to help, the Aero Club in its management and control of aviation in this country.

"Again with my thanks,

"Yours very truly,

(Signed) "J. T. C. MOORE-BRABAZON."

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### AUSTRALIAN £5,000 PRIZE.

In view of the great interest attaching to them, we reproduce in full the regulations which have been drawn up in connection with the prize of £5,000 offered by the Australian Commonwealth for the flying machine of Australian origin adjudged to be the best for military purposes. It will be seen that they are exceptionally severe. Entries close on March 31st next.

#### Conditions.

1. In these conditions "Minister" means the Minister of State of the Commonwealth for Defence or the Minister of State for the time being administering the Defence Acts of the Commonwealth.

2. The inventor or designer of the machine and the entrant for the prize must each have been resident in Australia for at least two years, and must each be a natural-born or naturalized British subject. The entrant for the prize must operate the machine during the test or tests.

3. The machine with which the inventor, designer, or entrant competes must not be supported in any manner by a gas lighter than air, and must embody sufficient novelty and invention over and above what has been previously published in Australia to warrant the grant of Letters Patent under the Patents Acts of the Commonwealth of Australia.

4. The complete machine, *i.e.*, motors, planes, propellers, and all other parts thereof, shall be as far as possible constructed in Australia by Australians. In cases where the entrant for the prize satisfies the Minister that any parts of the machine cannot be made in Australia the importation of such parts will be permitted. This condition shall not be held to apply to raw material.

5. The machine must be able to rise from the ground without appreciable delay under its own power and without the aid of special starting apparatus, and must be able to alight without damage to its machinery or gear. It must be capable of "poising" or remaining over a given area for what would in the opinion of the Minister be sufficient time to enable such observations to be taken as may be necessary for military purposes.

6. The machine must be able to develop a speed when required of not less than 20 miles per hour, and must be capable of carrying sufficient fuel to remain in action for not less than five hours.

7. The test or tests shall take place at such time or times and place or places as may be fixed by the Minister for that purpose and in the presence of such officers or persons as may be detailed by the Minister, and the entrant for the prize must have his machine ready for the test at the time and place fixed.

8. The test flight shall be a triangular course not exceeding 20 miles in all, and the machine must return to its original starting point without having touched the ground or water, as the case may be.

9. In the trials each machine must carry at least two persons, one of whom must be available for taking observations. The total

loading over and above the weight of the complete machine must not be less than 350 lbs.

10. In arriving at a decision special consideration will be given to the following points:—

a. Range of speed, maximum and minimum.

b. Liability from accident resulting from failure of engine, propeller, frame or planes.

c. Facility of starting and alighting.

d. Facility of rapidly arising and descending.

e. Capability of maintaining flight for lengthy period.

f. Capability of steering in various directions and of manœuvring generally.

g. Simplicity and effectiveness of design, and adaptability for being rapidly taken apart for packing, transport or storage, and re-erection.

11. Any failure at the trial flight shall not necessarily debar a competitor or competitors from further trials.

12. Entries will only be accepted on the express condition that the entrant waives all claim for injury either to himself or to his apparatus, and assumes all liability for damage to third parties or their property, and indemnifies the Commonwealth Government against any claims by any person whomsoever for compensation for injuries to person or property arising out of or by reason of any tests of the machine in competition for the prize. The said Government shall accept no responsibility for the custody or safety of any machine submitted.

13. Every entry must be accompanied by full plans and specifications of the machine, which will be regarded as strictly secret by the Minister, and be returned if not acquired by the Government.

14. The successful machine shall, if considered by the Minister satisfactory for military purposes, be for the space of three months at the disposal of the Commonwealth Government at a price to be fixed by arbitration.

15. Should, in the opinion of the Minister, none of the machines submitted reasonably comply with the above conditions or otherwise be suitable for military purposes he may decline to make any award, and in that event none of the entrants shall be entitled to the prize or to any payment whatever.

16. The Minister shall be the sole judge as to whether these conditions shall have been properly complied with, and his decision shall be final.

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#### Flight in Australia.

THE land of the Southern Cross now has its flying man, Mr. Colin Defries, who took out a Wright machine some time ago, having met with success in his experiments at Sydney, and on Friday of last week making a good flight.



# AERO CLUB OF THE UNITED KINGDOM.

## OFFICIAL NOTICES TO MEMBERS.

### Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 14th inst., when there were present: Mr. Roger W. Wallace, K.C., in the chair, Mr. Ernest C. Bucknall, Col. J. E. Capper, C.B., R.E., Mr. Martin Dale, the Earl of Hardwicke, Mr. V. Ker-Seymer, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. C. F. Pollock, Hon. C. S. Rolls, Mr. J. Lyons Sampson, Mr. Stanley Spooner, and Joint Secretaries, Capt. E. Claremont, R.N., and Harold E. Perrin.

**New Members.**—The following new Members were elected:—

|                                |                           |
|--------------------------------|---------------------------|
| R. S. Balfour.                 | C. W. Hacking.            |
| Capt. Edmund I. Bax.           | W. Harbrow.               |
| Hon. Hubert Beaumont, M.P.     | William Frederick Heddon. |
| Lieut. F. L. M. Boothby, R.N.  | William F. Hoare-Ward.    |
| The Lady May Boothby.          | Claude Johnson.           |
| Capt. R. S. Brown.             | Lieut. G. B. Lewis, R.N.  |
| R. B. Cafferata.               | Lieut. L. E. L. Maton.    |
| Percy C. Culver.               | Thomas W. Noad.           |
| L. Graham Davies.              | John Palethorpe.          |
| George Yarker Dickson.         | W. H. Preece.             |
| William Arthur Dickson.        | J. D. Roots.              |
| Capt. Bertram Dixon, R.F.A.    | Charles H. Segnier-Brown. |
| Ernest W. Edwards.             | Isaac H. Storey.          |
| Baron Oscar E. von Ernsthause. | Dr. Edmund Vaudrey.       |
| Mrs. Granger.                  | Henry Webb.               |

### Aero Exhibition at Olympia.

The Society of Motor Manufacturers have decided to organise an Aero Exhibition under the auspices of the Aero Club of the United Kingdom, to be held at Olympia in March next. Members wishing to exhibit full-sized aeroplanes are requested to communicate with the Aero Club as soon as possible.

It is also proposed to organise an exhibit of model flying machines. Those desirous of exhibiting are requested to make application to the Aero Club. Free space will be given to model exhibitors, and prizes will be awarded, particulars of which will be announced later.

### Membership.

The membership of the Aero Club is increasing so rapidly that the 1,000 Founder Members are nearly complete. It is hoped, therefore, that Members will notify their friends who are thinking of joining, as immediately the total of 1,000 is reached the subscription will be increased and an entrance fee charged.

### New Premises.

The Committee have acquired new premises at 166, Piccadilly. A large reading and writing room will be set apart entirely for the Members. They will be ready for occupation on January 1st next.

### Shellbeach Flying Ground.

Members visiting the flying ground are requested to have with them their membership cards, as strict instructions have been given to admit only members to the flying ground.

Members are also reminded that access to the aeroplane sheds can only be obtained with the written consent of the owners of the flying machines.

### Additional Flying Ground.

The Aero Club have made arrangements with the proprietor of grounds at Eastchurch, to be used as an auxiliary flying ground for their Members. The ground is situated within half a mile of Eastchurch Station on the Sheppey Light Railway, and the same railway facilities will apply as at Shellbeach. The surface of the ground is very level and free from ditches.

A limited number of sheds may be erected on the grounds, and all particulars can be obtained from the Secretaries of the Club.

Designs of sheds must be submitted to the Committee of the Aero Club in the first instance.

### Hiring of Sheds.

Sheds can now be hired out to members at Shellbeach. Full particulars can be obtained from the Secretaries of the Club.

**Railway Arrangements.**—The following reduced fares have been arranged with the railway company for members visiting Shellbeach:—

1st Class return, 8s.; 2nd Class return, 6s. 6d.; 3rd Class return, 5s.

Tickets available for one month from date of issue.

Members desiring to avail themselves of these reduced fares are required to produce vouchers at the booking offices. Vouchers can be obtained from the Secretary of the Aero Club. Trains leave Victoria, Holborn, or St. Paul's.

For the convenience of Members, the best train is the 9.45 a.m. from Victoria, arriving at Queenborough 10.55. At Queenborough change to the Sheppey Light Railway for Leysdown (Shellbeach), which is  $\frac{3}{4}$ -mile from the flying ground.

E. CLAREMONT, CAPT. R.N.,  
HAROLD E. PERRIN,

Joint Secretaries.

The Aero Club of the United Kingdom,  
166, Piccadilly, W.



## AERO CLUB OF THE UNITED KINGDOM.—ANNUAL DINNER.

HIS GRACE THE DUKE OF ARGYLL presided over the Annual Dinner of the Aero Club of the United Kingdom, held on Wednesday evening last at the Whitehall Rooms, and among those present in the large and distinguished company were H.S.H. Prince Francis of Teck, Mr. Roger Wallace, K.C., Admiral of the Fleet Sir E. H. Seymour, Lord Kinnaird, Earl of Hardwicke, Hon. C. S. Rolls, Prof. J. Harvard Biles, LL.D., Prof. A. K. Huntington, Dr. W. J. S. Lockyer, Col. J. E. Capper, C.B., R.E., Baron Henry de Ville, Col. C. F. Massy, Col. Bosworth, Messrs. E. Manville, E. P. Frost, and many of the prominent members of the club.

After the loyal toasts had been duly honoured, the various prizes and trophies won during the year were presented by the Chairman, and Mr. Kennedy Jones, on behalf of the proprietors of the *Daily Mail*, presented Mr. Moore-Brabazon with the £1,000 prize for the first all-British machine to accomplish a circular mile flight. By the desire of the winner, the prize took the form of a handsome silver cup to serve as a souvenir of his achievement, in addition to a cheque.

In acknowledging the prize, Mr. Moore-Brabazon spoke of the assistance and encouragement which the *Daily Mail* had given to aviation, and disowned the major part of the credit in winning the prize. Rather, he said, credit should be given to the genius of Mr. Horace Short, the designer and constructor of his machine, and to Mr. Green, the maker of the engine with which the prize was won. He thought those two gentlemen ought to have shared the honour with him, but as the rules specified that the pilot must receive the reward, he had no alternative but to be a martyr and resignedly accept the prize.

The toast of "The Aero Club of the United Kingdom" was pro-

posed by the Chairman, who pointed out that although a great impulse to the science of aviation had been given by the large prizes offered, he would suggest the great advantage that would accrue if a committee pledged to secrecy could consider the ideas of inventors, and if they thought well to advance the means for constructing models. Military and naval men were seriously considering the novel factors introduced into problems of warfare by airships and aeroplanes, which would be as difficult to hit in the dark as to fire a shell at the siren of a ship in a fog. The French Government had spent £250,000 in experiments, and the Germans a million and a half, but the British Government had not expended much more than £20,000. England could not afford to lie on her oars, and merely take advantage of the work of others.

In replying to the toast, Mr. Roger Wallace, Chairman of the club, referred first of all to the great growth of the membership of the club during the past few months. He then went on to speak of national defence, and said that if the country was to be secure this new form of attack by means of aeroplane and airship must be provided for by appropriate means of defence, and the Government was not doing its duty if it allowed men who had studied these questions to leave its service for that of commercial concerns because of the higher salaries offered them.

The toast of "The Visitors" was proposed by Admiral Seymour, and H.S.H. Prince Francis of Teck responded.

After the dinner a musical programme, contributed to by Miss Helen Mar, Miss Mavis Clare, Miss Violet Carmen, Miss Ruby Miller, Mr. Maurice Farkoa, Mr. Frank Haskoll, Mr. McKeown, Mr. Stanley Adams and Mdlle. de Negress entertained the company up to midnight.



## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

(NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary.)

### Aeronautical Society of Great Britain (53, VICTORIA ST., S.W.).

AT a meeting of the Council held on Tuesday, December 14th, the following new members were elected:—E. W. Twining, O. C. Jones, H. A. T. Turrill, A. Chatterton Sim, F. J. Ledouther, Miss D. Prentice, G. G. Turri, A. B. E. Cheeseman, Major H. R. Cook, M. Holroyd Smith, H. E. Holding, W. R. Cooper, G. B. Mann, Engineer-Lieut. W. B. Hall, J. E. Ward, and D. W. A. Barton. Colonel H. E. Tyler, R.E., was appointed hon. treasurer, and Mr. J. E. Ward hon. auditor. The post of hon. secretary, left vacant by the retirement of Colonel Fullerton at the end of this year, was not filled, and remains for the present in abeyance. Mr. J. H. Ledeboer and Mr. T. O'B. Hubbard were appointed joint-editors of the *Aeronautical Journal*.

### Glasgow Model Aero Club (101, ST. VINCENT STREET).

THIS club is organising "The Glasgow Aeronautical Exhibition," to be held from 3rd to 8th January, 1910, and should be very pleased if any who have models and would care to send same for exhibition would communicate with the secretaries, stating particulars of models, as we are devoting some space to those outside of Glasgow.

### Hampshire Aero Club (82, PALMERSTON ROAD, SOUTHSEA).

UNDER the presidency of Mr. Patrick Alexander the Hampshire Aero Club is rapidly extending its sphere of influence and usefulness. Lectures on subjects connected with aeronautics have been inaugurated, and papers by Mr. Powell on oil fuel, and by Mr. Tucker on internal-combustion engines, have interested large audiences.

Meanwhile, the practical side has not been neglected. A site has been secured for hangars and machines, and experiments in aviation will shortly be made. It need scarcely be noted that in the interest of the experimenters details cannot at present be published.

An extraordinary meeting was held at "The Admiral's Head," Portsmouth, on the 13th inst., at which important preliminaries were definitely arranged.

The secretary is glad to be able to state that the membership is increasing daily and has already reached a total of over 70.

### Hartlepool's Aero Club (56, WHITEY STREET, W. HARTLEPOOL).

AT the last meeting of this club a committee was appointed to draft plans and estimates for a practical glider. It was decided to organise an exhibition of model aeroplanes for February, 1910, and many members promised to enter the competition. The Secretary (Mr. T. Beckett) was instructed to get into communication with other Northern clubs to discuss the question of a National Council for Aviation. Mr. A. Barrett (President) and Mr. B. T. Hart reported the proceedings at the recent London Conference.

### Midland Aero Club (THE BUNGALOW, STECHFORD, BIRMINGHAM)

ON Saturday, December 11th, the Midland Aero Club held their First Annual Dinner at the Grand Hotel, Birmingham. Captain John H. Cook, F.L.S., F.G.S., Chairman of Council, presided, and the Rt. Hon. The Lord Mayor of Birmingham was the guest of the evening. The function was well attended in spite of a somewhat unpropitious date having been selected, many of the prominent

members of the Club being unavoidably absent. A musical programme added considerably to the general enjoyment.

The toast of "The Club" was proposed by Mr. J. Norris, of Sutton Coldfield, who complimented the officers on their enterprise, and especially on the afternoon's sport which they recently gave their members in his district. He said he considered that work like this was calculated to keep England well to the fore in all matters appertaining to aviation.

The Chairman in reply referred to the very promising membership of the Club, that although only three months old included 250 names on the roll. During the next six months the Club hope to repeat the success of the Sutton Coldfield meeting, and had also arranged for a series of social evenings and lectures by well-known authorities like Sir Hiram Maxim and Mr. F. W. Lanchester.

The Honorary Secretary of the Club also responded to the toast, and pointed out that good as the membership of the Club is at the present time, nevertheless, it is small in actual numbers, so that the possibility of carrying out the ambitious scheme already entertained depends in some measure upon the generosity of members towards the subscription list.

The Lord Mayor of Birmingham, responding to the toast of "The Lord Mayor and Visitors," proposed by Mr. C. F. Dawes, said that the Midlands of all places should lead in the construction of flying machines, the district being so obviously well suited to such an industry. Possessing a splendid body of mechanical engineers, and already equipped with some of the finest factories in the world, Birmingham and its surrounding towns is pre-eminently the place for the practical carrying out of new inventions. In his capacity of Lord Mayor he wished the Club, and all similar institutions, every possible success.

The last toast on the list, that of "Aviation," was proposed by Mr. E. T. Cresswell, of Wolverhampton, and responded to by Mr. Pepper.

Preceding the last toast, the Lord Mayor presented medals won by competitors at Sutton Coldfield in the Club's competition.

### Sheffield and District Aero Club (36, COLVER ROAD).

A GENERAL meeting of the above club was held on Wednesday, the 8th inst., when Mr. A. V. Kavanagh presided. The chairman opened the meeting with some interesting remarks on aviation. Letters were read from Earl Fitzwilliam, accepting the presidency, and from Mr. C. B. Stuart-Wortley, M.P., and Mr. Percy Richardson, of the Sheffield-Simplex Motor Works, accepting vice-presidencies. The rules which had previously been drawn up by the committee were then dealt with and, after some minor alterations had been made, passed unanimously. The question of headquarters was left to the committee. A number of sketches for the club badge were then submitted, and eventually one was selected by ballot. At the close of the meeting great interest was shown in the well executed scale drawing of a glider which a member has in course of construction. It has been decided that the number of "founder" members shall be limited to 100, for whom the subscription shall be 10s. 6d. per annum. When that number shall be completed the subscription will then be raised to one guinea. The next meeting will be held on Wednesday evening, the 22nd inst., at the Wentworth Café in the large dining room.



## FLIGHT AT SOUTH KENSINGTON.

ARRANGEMENTS have been made by the Governors of the Imperial College of Science and Technology for a series of short courses of lectures on problems connected with the general subject of aeronautics, and for the award of scholarships to qualified students desirous of undertaking research work in scientific problems connected with aeronautics.

The first of three courses will begin about the middle of January next, in which Sir George Greenhill, formerly Professor of Mathematics in the Ordnance College, Woolwich, will treat of "The Dynamics of an Aeroplane."

In the early part of February, H. R. A. Mallock, Esq., F.R.S., the eminent physicist and consulting engineer, who is also a Civil Member of the Ordnance Committee, will begin to deal with "Fluid Resistance," and after Easter, Col. H. C. L. Holden, M.I.E.E., F.R.S., Head of the Royal Gun and Carriage Factories at Woolwich, who is the well-known inventor of instruments and apparatus connected with artillery and the science

of electricity, will take up the subject of "Light Petrol Motors for Aerial Work." It is hoped that the nominal fee charged will bring the lectures within easy reach of all persons interested in the scientific side of aeronautics.

The Research Scholarships are to be tenable for one year at the Imperial College, and in suitable cases provision may be made for part of the work to be undertaken at the National Physical Laboratory. Scholars will be entitled to free admission to the College, and to a maintenance allowance varying with the circumstances of the individual.

The scholarships are intended to afford an opportunity to qualified students of prosecuting the higher branches of any subject in which they may be specially interested, particularly in their bearing upon aeronautics.

It is expected that they will be awarded to students whose previous education has reached a standard equal to that required for degree purposes.

## AVIATORS AND THEIR DOINGS AT PAU.



AT PAU.—M. Bleriot and some of his pupils. From right to left, MM. A. Leblanc, L. Bleriot, Claude Grahame White, and A. I. Milne-Wilson. On the left is a "snap" of M. Bleriot "planing" to earth with his motor stopped from a height of 75 metres on November 28th.

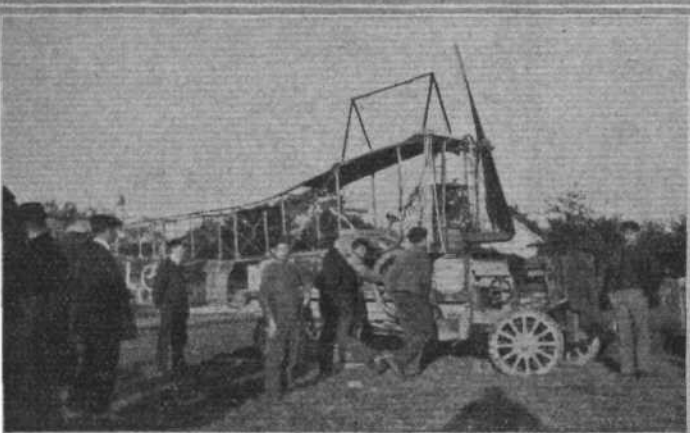
FROM Mr. Claude Grahame White, who has taken up aviation with considerable enterprise and is undertaking the teaching of practical flight, we have received some interesting photographs (which we reproduce) of some of the aviators at present at Pau, and some particulars of his own progress. Mr. Grahame White writes as follows:—

"We took delivery of our 80-h.p. 8-cylinder E.N.V. two-seated Bleriot monoplane, type XII, now known as "White Eagle," in Paris on November 7th, and accomplished several very successful flights at Issy during the next few days, and then sent the machine down here, where we are having glorious flying weather, and since arrival we have accomplished some record speed flights, covering on Sunday, November 28th, a distance of 6 kilometres in a circular flight, both with and against the wind, at an officially recorded speed of 96 kilometres per hour. However, following M. Bleriot's advice, we are now sending this machine back to the works in Paris to have certain modifications and improvements carried out which will considerably reduce the speed and make it more

comfortable and less dangerous (in case of accident) for learners and beginners, as it is our intention to instruct on a similar machine the clients who have already purchased aeroplanes from us, and also several clients who wish to learn and experience the sensation of flying without any obligation to purchase in the event of their not taking kindly to this particular form of sport.

"We expect delivery of another two-seated Bleriot monoplane by the end of the month, and in the meantime we are instructing on a couple of small single-seated 25-h.p. Bleriot monoplanes, on which type M. Bleriot has achieved all his success.

"We have two private flying grounds in course of preparation within easy reach of London, and here every convenience for aviators will be provided for learners under our tuition by the spring of 1910; but in the meantime, as the weather is so unsettled in England, and so unsuitable for pupil-aviators, we are conducting all our trials and instructing our pupils here in Pau, which is recognised as one of the most sheltered and windless spots on the Continent, and is within twenty-one hours of London, and apart from the attractions of aviation, it is a fashionable winter resort, with all the various winter sports and pastimes within easy reach.



AT PAU.—On the left, arrival of Mr. Claude Grahame White's two-seated, type XII, Bleriot monoplane, fitted with a 60-80-h.p. E.N.V. engine, at Pau Aerodrome on November 24th last. On the right, starting for a trial run on November 28th, on Mr. Grahame White's "White Eagle." On this occasion an officially-timed circular flight of 6 kiloms., at a record speed of 96 k.p.h., with a passenger up, was made.



"For those who prefer biplanes, we have ordered a latest type Farman two-seated biplane, fitted with 50-h.p. 7-cylinder Gnome motor, and we obtain delivery of this machine early next month. We have also placed a contract for a large number of Bleriot monoplanes, and have secured the sole and exclusive agency for Farman biplanes for South and Central Africa, and can give early delivery of both types of aeroplanes.

"We are already instructing two pupils here now, and are expecting the arrival in a few days of some half-dozen more, and have just received news from our London offices informing us that two ladies have paid their tuition fees, and are on their way over here to receive tuition, which is again another proof of the enthusiasm which has lately been aroused in England in this new and most invigorating sport of aviation."

## AVIATION NEWS OF THE WEEK.

### Flying Meetings not Exhibitions.

APPROVAL has recently been given by the Society of Motor Manufacturers and Traders to a recommendation of the Aero Section Committee that flying meetings be expressly declared not to be exhibitions or shows within the meaning of the bond. It has also been recommended that the S.M.M.T. should sanction exhibitions of the nature of the Olympia Show outside the Metropolis.

### A Bradford Aerodrome.

THE Northern Automobile Co., of Bradford, who are doing quite a good business in Bleriot monoplanes, have now made arrangements for a local flying ground. The ground is the property of the Corporation, is situated at Apperley Bridge, and is some thirty-four acres in extent. A large house has been taken by the Company, and this will be fitted up as a club-house with every convenience for visitors and others.

### Flight Meetings in France.

ALREADY the Aero Club of France has arranged for ten meetings to be carried out next year, either under its own control or those of its affiliated clubs, and at these meetings the prize-money to be distributed will reach the enormous total of 1,350,000 francs (£54,000). The dates provisionally selected are as follows, and they are to be submitted to the conference of the F.A.I. on January 10th for approval.

| Date.         | Place.   | Total Prizes.         |
|---------------|--|-----------------------|
| Feb. 6-13...  | Cairo ... ..   | 212,000 frs. (£8,480) |
| April ... ..  | Biarritz ... ..                                      | 200,000 frs. (£8,000) |
| April 3-10... | Cannes ... ..  | 80,000 frs. (£3,200)  |
| April 15-25   | Nice ... ..  | 240,000 frs. (£9,600) |
| May 7-9 ...   | Croix-d'Hins (Bordeaux) ...                          | 40,000 frs. (£1,600)  |
| May 14-22     | Lyon ... ..  | 150,000 frs. (£6,000) |
| June 5-12...  | Vichy ... ..   | 30,000 frs. (£1,200)  |
| July 3-10 ... | A.C. de F. Gordon-Bennett<br>(eliminating trials)... | —                     |
| Sept. 4-11... | Croix-d'Hins (Bordeaux) ...                          | 200,000 frs. (£8,000) |
| Sept. 23-30   | Havre-Deauville-Trouville ...                        | 200,000 frs. (£8,000) |

### The Altitude Record.

MR. HUBERT LATHAM's altitude of 453 metres, which he attained at Chalons on December 10th, has been officially recognised and registered as the world's record for height.

### Flying at Issy.

ON the 8th inst., two Bleriot pupils, MM. Thorup and Plessety, were receiving instruction at Issy from the works manager, M. Dumas, while M. de Lesseps made two short flights on a Bleriot machine of the cross-Channel type, including one of three and a half circuits at a height of 50 metres. On the following day this was bettered by a flight of 35 mins. duration at a height of 60 metres. This performance was repeated on the 13th inst., when M. Odier also had the Vendome biplane out, and covered three circuits of the ground, but only at a height of five metres, and on stopping, the machine was considerably damaged in landing.

### Delagrang and Others at Juvisy.

DURING the last few days Delagrang has been busy at Juvisy practising on his Bleriot, and also teaching his pupils, Prevotau and Le Blon. Count Lambert, who has been experimenting with starting without using the derrick, had a nasty accident on the 10th. By some means the petrol caught alight, and considerable damage was done before the flames were put out. On the same day, too, Prevotau had a sudden fall from a height of 30 metres, and, although the aviator escaped without hurt, the machine was badly smashed. Others who have made short flights during the last few days are Ludovique on the Goupy, Koechlin on his monoplane, Gaudant on a Voisin, and Gaubert on a Wright.

### Chateau Flies for an Hour.

M. CHATEAU, the instructor of the Voisin school at Chalons, is determined to make a bold bid for the Michelin Cup, and on the 12th, made an extended trial by way of preparation. Flying on the Wolseley engined Voisin belonging to M. Baeder, he was aloft for 1h. 1m. 15s., during which he flew over Chalons Camp and the surrounding country, covering a distance of about 65 kiloms., his altitude averaging about 40 metres.

### Doings at Chalons.

THE outstanding event of the week at Chalons Camp was M. Chateau's flight of over an hour on the 12th. The training of the Voisin pupils by M. Chateau and the Antoinette pupils by Mr. Latham was continued. On the 9th Sig. R. Ponzelli, an Italian journalist, commenced to take lessons on the Voisin machine, and so well did he progress that on the 13th he was able to fly round the ground twice unaccompanied. On the 11th Latham flew for about a quarter of an hour at a height of 300 metres. The 13th proved an unlucky day to three of the aviators. Capt. Burgeat, on his Antoinette, damaged his machine by a too sudden descent. Grunet, on the Henry Farman biplane which Sommer has just sold to M. Brimont, by a false manoeuvre, crashed to earth, while an Austrian flyer named Waskowski also smashed his machine badly.

### Opening Flight at Croix d'Hins.

THE honour of being the first to fly at the Croix d'Hins aerodrome fell to M. Roger Morin, who has been experimenting with a Bleriot monoplane. On the 11th inst., he succeeded in getting it to rise and remain in the air for a distance of about 250 metres in a straight line.

### Molon a "Pilote-Aviateur."

AFTER continuing his practice flights at Havre for some time, Molon summoned the officials of the Aero Club of Havre on the 12th inst. to officially observe his attempt to carry out the qualifying tests for the pilote-aviateur certificate. These tests were satisfactorily carried out, Molon flying for more than 30 kiloms., at times rising to a height of 150 metres, and they were repeated on the two following days in spite of strong winds.

## Santos Dumont Capsized.

WHILE flying in a strong wind at St. Cyr on the 10th inst., M. Santos Dumont's machine was caught by a sudden gust and capsized, with the result that one wing was broken. Just previously he had flown for a quarter of an hour at a height of about 20 metres.

## No Site for Santos Dumont Statue.

By way of commemorating M. Santos Dumont's memorable exploits at Bagatelle, the French Aero Club recently proposed to erect a statue there in the Bois de Boulogne. On applying to the Municipal Council, however, they were rather surprised to have their permission refused on the ground that there are already too many monuments in the open spaces, while too few exist in Paris.

## Pictures from an Aeroplane in Flight.

ON Monday, at Chalons, Mr. Latham successfully carried out the experiment of carrying a Pathé cinematograph operator and his machine, weighing 200 lbs. On the following day Mr. Latham made a journey over the surrounding country lasting seven minutes to enable the photographer to get a set of films from this unique view point.

## Activity at Pau.

DURING the past few days the Bleriot pupils have made great strides under the tutelage of Leblanc, and two notable new pupils arrived on the 9th inst. These were M. Paulhan and Prince Bibesco from Bucharest. Mr. Claude Grahame White effected several good flights on the 9th, and also on the 13th. On the former date he made his first complete circuit of the course, while later in the day he flew round the track five times, rising to a height of thirty metres, but in landing he buckled the wheels. Tuesday was a busy day for the Prince Bibesco, Mr. Grahame White and M. Aubran, who made their first officially controlled flight, with a view to qualifying for the certificate of *pilote aviateur*. Mr. Grahame White flew round the course twice at a height of 70 metres. During the afternoon M. Balsan went up to make a five

kilom. flight, and then kept on for 46 minutes before his petrol supply ran out, and caused him to land. At one time there were five of the pupils flying round the course. The other pupils who have made short flights are Stoeckel, Lesna, Kulhing, Grapperon and Mamet.

## Paulhan on a Monoplane.

M. PAULHAN is evidently determined to be a master at the art of flying, and with this end in view arrived at Pau on the 9th inst. for instruction on a Bleriot flyer which he has purchased. Curiously in his new mount for his first dozen trials, he was no better than any other novice, but after he had got the "hang" of his machine he was soon flying. On the 11th he was able to fly round the course a couple of times, and was quite familiar with the steering of his latest mount. It was, therefore, packed up and despatched to Havre. For his tour in the United States, Paulhan is taking two Henry Farman biplanes and two Bleriot monoplanes.

## Leblanc Visits Tissandier.

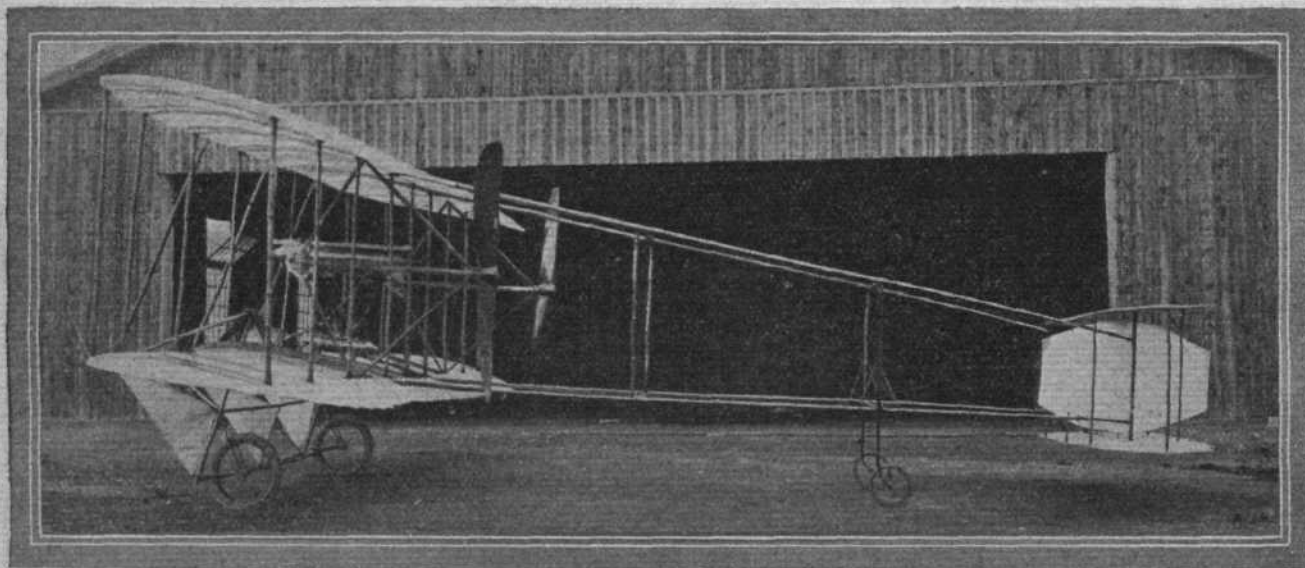
FOLLOWING the example of M. Bleriot, M. Leblanc flew across to M. Tissandier's flying ground at Pau on Tuesday, but he did not descend, contenting himself with dropping a visiting card attached to a piece of wood. He continued to fly on for about four kilometres further, and then turned round and returned to his shed without difficulty.

## Hanriot Flyers at Rheims.

DURING the past few days Ruchonnet has been flying at Rheims on a Hanriot monoplane, and on Tuesday he flew for about twenty minutes at a height of about 15 metres. Hanriot has also made one or two short flights, as has also his son, who is only 15 years of age.

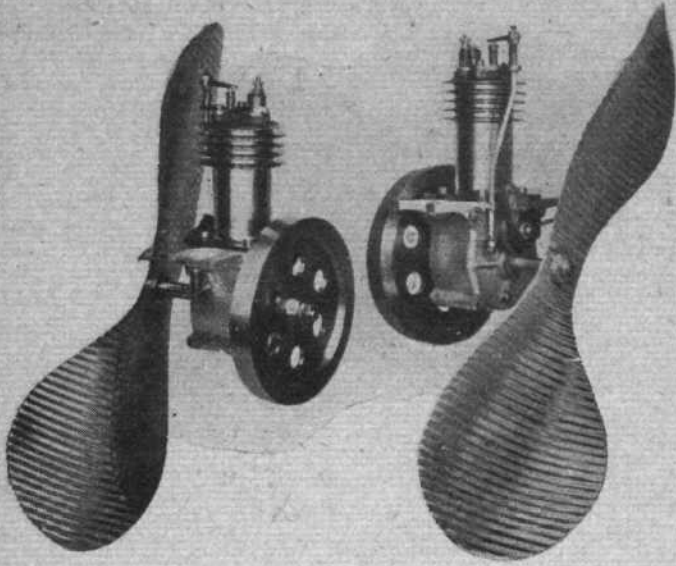
## The Cairo Meeting.

AMONG the many valuable prizes offered at this meeting next February will be a beautiful Arabian *objet d'art*, together with 10,000 francs, for the first aviator to fly from the Aerodrome to the Pyramids and back.



**A NEW BIPLANE**—The above photograph depicts an original biplane, which is the production of a new French firm, the Société Rossel-Peugeot, M. Frederic Rossel, the favourite assistant of Ader, having joined MM. Peugeot Frères. The machine has many distinguishing features, notably, the absence of a front elevator, the driving of the propellers, and the arrangement of the twin rudders between the planes of the tail. The propellers are driven through bevel gearing from a transverse shaft, which, in its turn, is driven by a chain from the twin-cylinder engine. The framework of the aeroplane, it will be noticed, is of bamboo.





A  $\frac{3}{4}$ -H.P. PETROL ENGINE FOR MODELS.—The above well-built engine is one that is being supplied by Mr. W. Cochrane, fitted with one of his  $18\frac{1}{2}$ -in. propellers, to Mr. Moya, of Leicester, for demonstration purposes. It weighs 8 lbs. complete, as seen above; its bore and its stroke are  $1\frac{1}{2}$  ins.; and we are told that it gives a thrust of close upon  $5\frac{1}{2}$  lbs. when driving the propeller at 1,800 revs. per min. A similar model of  $\frac{1}{4}$ -h.p. is also to be put on the market by Mr. Cochrane at an equally moderate price very soon.

## AIRSHIP NEWS.

### "Zodiac III" at St. Cyr.

HAVING arrived back at its headquarters at St. Cyr, Count de la Vaulx's dirigible, "Zodiac III," has been inflated again, and on the 12th inst. made a trip lasting an hour, during which it was manoeuvred over Le Chesney, Vancresson, Garches, Sèrres, Ville d'Avray, and Versailles.

### L.N.A. and Dirigibles.

WITH the object of infusing fresh interest into military aeronautics in France, the Ligue Nationale Aérienne have recently formed a Military Committee with General de Lacrois as President and General Langlois as Vice-President. At their first meeting this Committee came to the conclusion that the situation in Germany regarding dirigibles constituted a grave danger to France. Although great developments have been made with aeroplanes, it was agreed they cannot render the same service as dirigibles, and it is therefore necessary that France should have a fleet of airships ready to meet a hostile aerial squadron. The Committee will therefore carry on propaganda work with this end in view.

### Accident with a German Dirigible.

MISFORTUNE dogged the trials of a new dirigible balloon built for the Rhenish Westphalian Motor Airship Co., on Sunday last. Starting from Leichlingen, the airship had not proceeded far before it was necessary to descend to repair a gear-wheel. All night was spent in an open field, and the next morning a fresh start made, but by the time Gladbach was reached further defects rendered another descent necessary. A large crowd of sightseers was attracted by the unusual spectacle, and they greatly hampered the anchoring operations, so that the balloon could not be kept head on to the wind. Eventually, one gust of wind caused the ropes to break, and the gas-bag floated away but burst in the air. The car and motor of the dirigible were not seriously damaged.

Among the flyers who are to take part in the meeting will be the young American sportsman, Mr. Hayden Sands, who purchased the Antoinette on which Mr. Latham made the height record the other day. Mr. Sands is already at Cairo practising.

### Commander Engelhardt has a Fall.

WHILE practising on the Wright flyer at Johan-nistal, on Saturday last, Commander Engelhardt fell from a height of about 15 ft., apparently due to some defect in the steering gear. The machine was broken badly, but the aviator sustained slight injuries.

### Flying in Canada.

ON Thursday of last week, Earl Grey, the Governor-General of Canada, paid a visit to Dr. Graham Bell's laboratory at Baddeck, N.S., and spent some time examining the different flying machines there. Afterwards Earl Grey had his first sight of an aeroplane in flight, when Mr. McCurdy, mounted on "Baddeck No. 1," flew for a mile in a heavy storm.

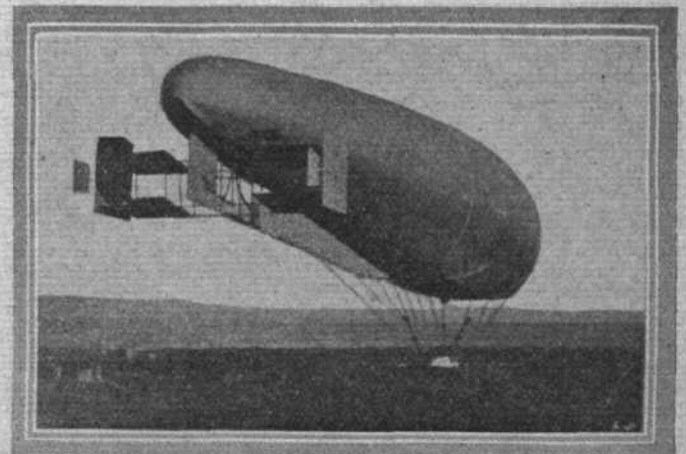
### L'Institut Aerotechnique.

A SITE has at last been found for the technical institute for flying matters, for which M. Henry Deutsch de la Meurthe so generously gave the endowments to the University of Paris at the end of June last. It is situated at St. Cyr, on the national road from Versailles to Rambouillet, at the junction of the Bois d'Arcy with that road. The opening ceremony has been fixed for May 1st next.

### To Replace "La République."

IN the *Journal Officiel* of the 14th inst. appeared decrees authorising the French Minister of War to accept (1) the offer of a dirigible balloon to replace "La République," made by MM. Lebaudy; (2) that of a motor made by MM. Panhard and Levassor, and (3) that of two wooden propellers made by M. Chauvière.

The dirigible will be put in hand immediately, and it will be remembered that in his original letter containing his generous offer M. Lebaudy said the work of construction would occupy about three months.



THE ITALIAN MILITARY DIRIGIBLE.—In its latest form the Italian military dirigible is somewhat different in appearance to what it was originally when the long pointed tail was the distinguishing feature. From the above photograph it will be seen that this has now been shortened, and a series of horizontal and vertical rudders fitted beneath. In the long-distance voyages of this airship, notably from Rome to Naples and back, these stabilising and steering-planes worked with every success.

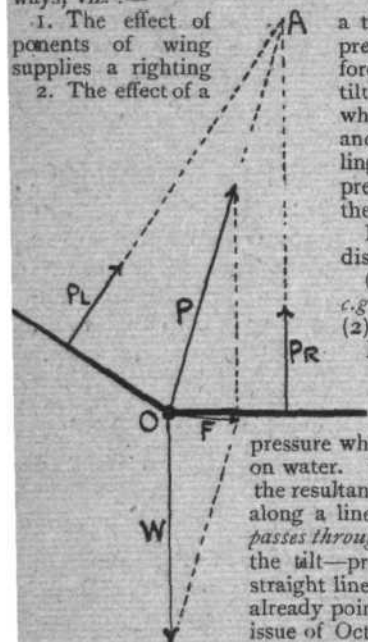
\* \* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

NOTICE.—Correspondents asking questions relating to articles which they have read in **FLIGHT**, would much facilitate our work of reference by kindly indicating the volume and page in their letters.

*To the Editor of FLIGHT.*

SIR,—This subject has been discussed at such length in your columns that one hesitates to add anything further on it. The letter of Mr. Flight, however, in your issue of November 27th, does not seem to the writer to leave the question in a satisfactory position. The stability has been explained by correspondents in two different ways, viz. :—

1. The effect of moments of wing supplies a righting
2. The effect of a



a tilt is to render the vertical compressure unequal, which inequality force.

tilt is to bring into action a force which urges the aeroplane sideways and downwards (whilst still travelling forward), causing an increased pressure on one wing which rights the machine.

Now these two explanations are distinctly different.

- (1) requires no deviation of the *c.g.* from a straight path, whilst  
(2) does require such a deviation.

PR It appears to the writer that (1) is quite inadmissible. This explanation might be correct, were an aeroplane acted on by a pressure which is always *vertical*, like a ship on water. With a dihedral angle, however, the resultant pressure on the two planes acts along a line bisecting the angle, and *always passes through the centre of gravity*, whatever the tilt—provided the *c.g.* continues in a straight line—thence, in this case the tilt (as already pointed out by Mr. Kemp, in your issue of October 30th), produces no righting couple. This argument, be it noted, assumes

no particular relative positions of  $c, g$ , and  $e, p$ .

Mr. Olley's diagram in your issue of October 30th, given also by Mr. Edgcombe on November 20th, surely gives the true explanation (No. 2 above). Referring to Mr. Edgcombe's letter, it will be seen that whatever the tilt, the resultant pressure,  $P$ , acts in a line passing through the *c.g.*, and therefore has no righting moment. But the aeroplane immediately commences to move along,  $O, F$ , *i.e.*, it deviates from its course. This at once gives an extra pressure on the right hand wing, and rights the machine.

Although, doubtless, we can consider an aeroplane as supported by the pressure due to constant "fall," this is not in itself sufficient to account for stability. It is the *real* downward motion produced by the vertical component of the force,  $O, F$ , which assists in righting the machine.

Yours, &c.,  
R. C. CLEUKER.

Letchworth.

[The principle of the dihedral angle is a subject which can stand quite a lot of discussion, not so much because of the rights and wrongs of the case as because it is so essentially one of those technicalities which present themselves to different people from different points of view. In technology there are many instances of alternative "treatments" and it is a well known fact that students of all degrees are commonly only able to see the truth of one; which one, depends on the style of logic that appeals to their individual minds. We fancy that the dihedral angle is a case in point among the problems in aerodynamics, and consequently we welcome the views of readers as the most satisfactory way of presenting the subject in every respect.]

We have reproduced the diagrams which originally accompanied the letters of former correspondents and are referred to above.—ED.]

*To the Editor of FLIGHT.*

SIR.—I am building a model Antoinette monoplane of 1½ ins. to ft., and am doubtful whether to use clockwork or elastic as motive

power. Could you advise me as to this? The motor would be a J. Bonn and Co.'s double-gear'd elastic motor of 36 ins. length and 8 ozs. weight, or else the clockwork one made by Messrs. A. W. Gamage, weight 28 ozs.

The wing area is 525 sq. ins. Is this sufficient for the weight of motor (clockwork)?

Could you furnish me with these particulars? Wishing your paper every success.

Yours truly,  
ERIC A. LATTEB.

Canterbury.

[The great difference in the weight of the two motors suggests that it would be advisable to try the lighter one first. It is always difficult to estimate the carrying capacity of the model, and more than disappointing to find that it has been overlooked.]

If the elastic motor is successful, it would be real progress to try and make the machine carry a clockwork motor, as not only would there be the additional weight, but much would be learnt about the respective balance as the result of concentrating the weight in another part of the machine. It is along these lines that model experiments have such an educational value.—ED.]

*To the Editor of FLIGHT.*

SIR,—Referring to the reply of your correspondent, Lilian E. Bland, in your issue of last week, may I submit some additional particulars to the subject, ash *v.* spruce, as follows, that while ash is much tougher, and will bear a greater tensile strain than spruce, it is not nearly so stiff as spruce or yellow deal, and while spruce is not nearly so durable as yellow deal, it has the disadvantage of containing many small round "dead" knots, which besides shrinking considerably, and easily falling out, also cause a serious local weakness, and knowing well the characteristics of both the ash and spruce and yellow deal, I should most certainly use the latter, wherever possible, especially as most of the knots found in yellow deal are an element of strength rather than weakness, as they are mostly "live" knots, and do not as a rule shrink, loosen, or fall out, although, of course, I should choose spars cut out of boards as nearly as possible entirely free from knots of any kind whatsoever.

The best yellow deal spars are those cut out of boards "between" the heartwood and the sapwood, thus in cutting up a 1 in. board, say, into strips or spars of 1½ ins. wide, I should choose a board, not exactly out of the "centre" of the tree, but slightly, though entirely, outside the real "pith centre" as one or two boards immediately central are very liable to "sun shake," and may split up after working and exposure, so, taking a board of 1 in. thick by 1½ ins. wide, I should leave 1 in. each side of this centre, and mark off towards outer edge of this board 2 or 3 spars each side, and that is all, for, by getting too near the outside edge, one cuts into the "sapwood" which has no "life," is porous, and very soon becomes weak on exposure, and will break "short" in any sudden and undue strain, either tensile, compressive, or torsive. Further, I should find the "root" end of the board and mark this carefully, and in building the body of a flying machine or aeroplane, put this root end of each spar always in front if possible and the "heart side" uppermost, these being in my opinion the best positions for equalising the various members in bracing up, and where uprights or posts are used, always put the "root" end at the bottom. May I say I have had a rather wide experience, covering many years of my life, in working up these and many other woods, and practically am well acquainted with their behaviour in uses under many and various conditions.

I fear this letter is too long for insertion in your splendid work FLIGHT, the numbers of which I possess from the first one, but having derived much pleasure and information from their pages, I beg to offer the above remarks for any use to which you may think them worthy of application.

Yours faithfully,  
HENRY BATH.

*To the Editor of FLIGHT.*

SIR,—I see that one of your correspondents is in trouble about the construction of the bamboo box girder; he does not see how to get the steel wire inside the pole. Possibly you might find space for the following explanation, and help him out of his difficulty.

The holes to allow the wire to pass through the noses of the bamboo pole, were obtained by the simple experiment of heating a  $\frac{3}{16}$ -in. bar of round iron red hot at one end, and pushing it through the pole. Nice clear holes are in this way obtained, and the bar itself can be used as a needle for pulling through the wire. I would warn your correspondent that the process described has the disad-



vantage that it creates a good deal of pungent smoke, and hence it had better be done in the open air. I have no doubt, however, (I have not tried it myself) that if a gimlet point was to be filed on to the iron bar, and the bar gripped in a carpenter's brace, the holes could also be bored through.

Yours faithfully,  
THE CHECKFIRE DOOR CO.

## DRESSING FABRIC AND A PETROL MOTOR WANTED.

To the Editor of FLIGHT.

SIR,—I notice in your issue of December 11th, also in a previous number, several of your correspondents complain of difficulty in dressing fabrics for model aeroplanes.

I venture to give a few suggestions for covering and proofing planes which I hope will interest your readers.

In the first place I find Jap silk, although extremely light, unsuitable for the purpose on account of the difficulty of working. I am given to understand that dressmakers simply detest "making up" Jap silk, and it does not appear wise for amateur engineers to rush in where the ladies fear to tread. Jackonette or nainsook will be found more suitable. The difference in weight, compared with Jap silk, being fully compensated for by the better "fit" to be obtained with either of the materials mentioned.

In passing, I may say that an aeroplane which depends upon the difference in weight of Jap silk, and say, nainsook for success or failure, to my mind seems hardly worth while troubling seriously about.

Now as to dressing; I have not tried the varnish recommended by the Aerial Supply Co., but I have tried other kinds of varnish and found none of them a success. My best results have been obtained with boiled oil and terebene. Care should be taken not to use too much of the latter or it will have a tendency to "draw" the fabric. The best way to find out the correct admixture is to stretch a few small pieces of the material and apply the preparation with a brush, adding the dryers until the desired result is obtained. I have never carefully measured the ingredients, so cannot say exactly how much of each is required.

I might mention that the nainsook should be dipped in boiling water and ironed out perfectly smooth before cutting out to fit planes. This will prevent the covering becoming "baggy" afterwards. The solution I suggest can be applied after the fabric is fixed in its permanent position, and I don't think any curling will occur.

Having said so much by way of giving advice, I should now like to ask for some myself, if I am not encroaching too much on your space.

Can any of your readers "put me on" a reliable model petrol motor (weighing from 6 to 10 lbs. with all accessories) at a reasonable price? Also, can you give me any information about an inexpensive "wick carburettor"? Thanking you in anticipation of insertion of this letter,

I am, Sir, yours, &c.,  
FRED COLLINS.

Ilford.

## GRATZE MONOPLANE.

To the Editor of FLIGHT.

SIR,—I herewith enclose a photograph of my monoplane, which contains several new and distinctive features which are protected by patents.

First, the steering is executed by the propeller, which works on a universal swivel joint. The wings are also pivoted on a junction of the frame on a patent universal-joint which enables them to be swivelled in any direction, *i.e.*, up or down, backwards or forwards, and to alter the angle of inclination or incidence.

The motor is an 8-cyl. 40-h.p. air-cooled engine.

Yours faithfully,  
p.p. E. V. GRATZE,  
A. N.

London, W.

## DETACHABLE SPARS.

To the Editor of FLIGHT.

SIR,—I see that one of my late assistants has again sent you particulars of an idea which I used on one of my aeroplanes. This time it is my method of attaching the outside boxes. However, he has left out a very important item, *i.e.*, the clips which I used to connect the planes themselves. Otherwise the posts would have to be of exceptional strength to stand the strain.

Yours faithfully,  
A. V. ROE.

Wembley Park.

## MODEL FLYER.

To the Editor of FLIGHT.

SIR,—Thinking of designing a model biplane-aeroplane (Farman princ.), I should be pleased if you would enlighten me on the following points:—1. What surface would be required to lift 5 lbs.? 2. How to fasten the silk to the main-planes? 3. Is a petrol motor more efficient than an electric one? 4. Is a  $\frac{1}{2}$ -h.p. petrol motor sufficient to drive a model one-ninth size of Farman's aeroplane? 5. What size of propeller to drive same?

Yours faithfully,  
PROPELLER.

Colwyn Bay.

[Perhaps some of our readers who have made models of about this size will come forward to the assistance of our correspondent.—Ed.]

## "AVIATION."

To the Editor of FLIGHT.

SIR,—Unless your correspondent "Gyropter" used the word "aviation" more than twenty-three years ago, he cannot claim to be the originator of it, since M. Jules Verne used it in his book "The Clipper of the Clouds" at least that number of years ago.

For my part I think "aviation" a much pleasanter word to use than "volitation," and its exact meaning quite near enough to the mark to justify its use.

Yours, etc.,  
HAROLD KELK.

Ten Mile Bank, Downham Market.

## FRAMEWORK FOR MODELS WANTED.

To the Editor of FLIGHT.

SIR,—Could you enlighten me as to where I can get materials for making the framework for a model monoplane.

Ready cut square or round sticks from  $\frac{1}{8}$  to  $\frac{1}{4}$  in. thick and about 2 ft. 6 ins. or 3 ft. long would suit my requirements nicely.

Thanking you in anticipation,

Yours faithfully,  
L. MORTELMANS.

Harringay.



Mr. Gratze's monoplane.

## AVIATION PROGRESS—PAST, PRESENT AND FUTURE.

To the Editor of FLIGHT.

SIR,—We notice in the daily Press an announcement that the French Aero Club have already arranged a series of nine meetings for the coming year, with prizes amounting to over £48,000.

What is this country doing?

What is our Aero Club doing?

What are our wealthy men doing?

It is useless to ask what the present Government is doing. We think it is quite fair that a manufacturer should ask these questions. Where are our flying grounds? Are the manufacturers supposed to finance them?

Where is the prize money? Is this to be provided by the manufacturers?

Who is arranging sporting fixtures for the coming year? Are these to be left to be arranged by speculators?

When the coming year has passed without sufficient progress having been made in this country it will not be fair to belabour the manufacturers with the old untrue statement that they will not "wake up."

France secured her lead in the motor car business by a lavish expenditure of money. A similar expenditure must now be made in this country if satisfactory progress in the art of flight is to be achieved.

At the present time a great many people in this country are interesting themselves in a practical manner in flight. A great deal of work is actually in hand. So far as our own work is concerned we only regret we cannot more rapidly increase our output. The individuals are at work in the most enthusiastic manner, but where combined effort is necessary, so far as we are aware, very little progress is being made. We should like to suggest that:—

1. A first-class club flying ground (altogether out of the hands of any group of speculators) is urgently needed, *not* in the most inaccessible region, *not* in the east-end of London, but within easy and pleasant reach of those who live in the wealthy district of London.

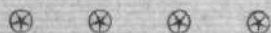
2. That a large—really large—prize fund should be collected. Progress in flight will only be attained by an enormous expenditure of money, and it does not seem unreasonable that some small proportion of this expenditure should, by means of this prize fund, be transferred from the active experimenters to the general body of those interested.

3. Some scheme of meetings for the coming year should be arranged and announced as soon as possible.

It will be a thousand pities if the Aero Club loses control of this sport, but they must justify their control. We do not want meetings that will clash; we do not want the control of speculators. We sincerely hope the Aero Club will succeed in securing an orderly advance.

May we add that we hope as little control as possible by regulations and rules and so on will be exercised over the designs of the manufacturers. We trust the manufacturers will be left free to try any method which seems to them promising. Novelties are so easily labelled freaks if they are opposed to the rules and regulations of a governing body.

Yours faithfully,  
NEW ENGINE MOTOR CO., LTD.,  
J. C. MORT, Director.



### Fittings for Aeroplanes.

A FIRM which is making a speciality of fittings for aeroplane work is Messrs. H. Rollet and Co., of Coldbath Square, Rosebery Avenue, E.C. They have not yet been able to get their complete catalogue out, but they will be pleased to send their temporary price list of clamps, tightening screws, lugs, pulleys, &c., to any of our readers who may be requiring such fittings.

MESSRS. MARKHAM AND PRANCE notify us that they are making a speciality of acting as consulting engineers to aeroplanists, whilst they are also supervising tests and trials on behalf of interested parties. The preparing of expert evidence in law cases forms an important branch of this firm of consultants' land and marine motoring work.

OWING to the great increase in their business the Bosch Magneto Co., Ltd., are moving into larger premises at 40-42, Newman Street, within next week.

## Aeronautical Patents Published.

Applied for in 1908.

Published December 16th, 1909.

17,855. F. W. SCHROEDER. Aerial ships.

25,315. W. P. THOMPSON. Flying machines.

Applied for in 1909.

Published December 9th, 1909.

4,217. T. ZORN. Airship.

6,568. J. B. PASSAT. Flying machines.

8,866. W. BRITAIN. Flying machines.

10,467. H. RIEDEL. Flying machines.

12,256. A. M. HERRING. Flying machines.

23,492. J. L. GARSED. Operating planes, wings, rudder of aerial machines.

Published December 16th, 1909.

1,999. H. C. BARBER. Aeroplanes.

8,344. O. COATES. Construction of aerial machine.

Published December 23rd, 1909.

1,909. A. SMIKALLA. Automatic flying machine.

5,662. R. BROCKLEHURST. Mechanical flying machines.

7,209. L. BREGUET. Flying machines, &c.

15,233. F. VON ERHENBERG. Safety anchor for airships.

## BACK NUMBERS OF "FLIGHT."

SEVERAL back numbers are now becoming **very scarce**, and when exhausted no more complete sets will be procurable.

The publishers have pleasure in announcing that they have secured a few of these back issues of FLIGHT, and any of our new readers who may wish for sets, No. 1 to date, except Nos. 2, 3, 4, 6, 8, 10, 12, 15, and 16, but including the numbers containing full description and Scale Drawings of the Bleriot, Curtiss, Voisin, and Cody biplanes, the Wright full-size glider, and of Santos Dumont's "Demoiselle" monoplane; can obtain same for 7s. 1d., post free (abroad 8s. 11d.).

Sets to date, including all the above and in addition the scarce higher-price numbers: Nos. 2, 1s. 6d.; 3, 3s.; 6, 1s.; 8, 1s.; 10, 1s.; 12, 1s. 6d.; 15, 1s.; 16, 3s. 6d.; and 31 (with scale drawings of the Bleriot cross-Channel flyer, 2s.), but exclusive of No. 4, which is now obtainable in bound volumes only at the end of the year, and otherwise out of print, can be obtained for 20s. 11d., post free (abroad 23s. 1d.) from the Publishers, 44, St. Martin's Lane, W.C.

The publishers have only a limited reserve stock for bound volumes at end of year. Those wishing, therefore, to ensure obtaining Volume I complete for year 1909—ready end of January—with Index and Title Page, can book same now at the price of 25s., bound in cloth boards. If bound in two Parts, January to June and July to December, 3s. 6d. extra. Orders will be booked for these in rotation as received. As various numbers become scarce the price will be raised accordingly.

We have now been able to secure a very few copies of No. 16, and can supply same at 3s. 6d. each.

Bleriot Number separately, 2s.

## FLIGHT.

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### CHRISTMAS HOLIDAYS.

NOTICE.—In consequence of the Christmas Holidays, FLIGHT will go to press next week one day earlier, viz., on Wednesday instead of Thursday. All editorial and advertisement matter must therefore reach this office not later than WEDNESDAY morning's post.